

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Identifier: (4N) 99.99% Barium Perchlorate Trihydrate

Product Code: BA-PCL-04-C.3HYD

CAS Number: 10294-39-0

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
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Los Angeles, CA 90024
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SECTION 2. HAZARDS IDENTIFICATION

Physical hazards Oxidizing solids Category 1

Health hazards Acute toxicity, oral Category 4

Acute toxicity, inhalation Category 4

Serious eye damage/eye irritation Category 2A

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

OSHA hazard(s) Not classified.



Label elements

Signal word Danger

Hazard statement May cause fire or explosion; strong oxidizer. Harmful if swallowed. Causes serious eye irritation.

Harmful if inhaled. May cause respiratory irritation.

Precautionary statement

Prevention Keep away from heat. Use only outdoors or in a well-ventilated area. Keep/Store away from

clothing and other combustible materials. Take any precaution to avoid mixing with combustibles.

Avoid breathing dust/fume. Wash thoroughly after handling. Do not eat, drink or smoke when

using this product. Wear protective gloves/eye protection/face protection. Keep away from clothing

and other combustible materials.

Response In case of fire: Use appropriate media for extinction. IF SWALLOWED: Call a POISON CENTER or

doctor/physician if you feel unwell. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Rinse mouth. If eye irritation persists: Get medical advice/attention. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container to an approved waste disposal plant.

Hazard(s) not otherwise Not classified.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Hazardous components

Chemical name Common name and synonyms CAS number %

BARIUM PERCHLORATE 10294-39-0 100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or

artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance.

Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before

removing clothes.

Eye contact Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

Most important

symptoms/effects, acute and delayed

Irritation of eyes and mucous membranes.

Indication of immediate

medical attention and special treatment needed

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.

Symptoms may be delayed. Provide general supportive measures and treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to

protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media Water.

Unsuitable extinguishing media

None known.

Specific hazards arising from the chemical

May cause fire or explosion; strong oxidizer. Strong oxidizer - contact with other material may cause fire.

Special protective equipment and precautions for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire-fighting

equipment/instructions

In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods Cool containers exposed to flames with water until well after the fire is out.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Prevent entry into waterways, sewer, basements or confined areas. For waste disposal, see section 13 of the MSDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

SECTION 7. HANDLING AND STORAGE

7. Handling and storage

Precautions for safe handling Take any precaution to avoid mixing with combustibles. Keep away from heat. Minimize dust

generation and accumulation. Do not taste or swallow. Avoid breathing dust. Avoid contact with eyes. Use only outdoors or in a well-ventilated area. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.

Conditions for safe storage,
including any
incompatibilities

Keep away from heat. Store in a well-ventilated place. Keep container tightly closed. Do not store near combustible materials. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material Type Value

BARIUM PERCHLORAT E PEL 0.5 mg/m³

(CAS 10294-39-0)

US. ACGIH Threshold Limit Values

Material Type Value

BARIUM PERCHLORAT E TWA 0.5 mg/m³

(CAS 10294-39-0)

US. NIOSH: Pocket Guide to Chemical Hazards

Material Type Value

BARIUM PERCHLORAT E TWA 0.5 mg/m³

(CAS 10294-39-0)

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering
controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear eye/face protection.

Skin protection

Hand protection Wear protective gloves.

Other Wear suitable protective clothing. Wear fire/flammable resistant/retardant clothing. Wear protective gloves.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Not available.

General hygiene
considerations

When using, do not eat, drink or smoke. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Crystalline.

Physical state Solid.

Form Solid.

Color White.

Odor Odorless.

Odor threshold Not available.
pH 5 - 8 (5% solution)
Melting point/freezing point Not available.
Initial boiling point and
boiling range
Not available.
Flash point Not available.
Evaporation rate Not available.
Flammability (solid, gas) N/A
Upper/lower flammability or explosive limits
Flammability limit - lower
(%)
Not available.
Flammability limit -
upper (%)
Not available.
Explosive limit - lower
(%)
Not available.
Explosive limit - upper
(%)
Not available.
Vapor pressure Not available.
Vapor density Not available.
Relative density Not available.
Solubility(ies) 77.2 % @ 0 C, approximately
Partition coefficient
(n-octanol/water)
Not available.
Auto-ignition temperature Not available.
Decomposition temperature 752 °F (400 °C) Approximately
Viscosity Not available.
Other information
Density 2.74 g/cm³
Molecular formula Ba(ClO₄)₂·3H₂O
Molecular weight 390.28
Specific gravity 2.74

SECTION 10. STABILITY AND REACTIVITY

Reactivity Combustible material.
Chemical stability Material is stable under normal conditions. Risk of explosion.
Possibility of hazardous
reactions
Hazardous polymerization does not occur.
Conditions to avoid Keep away from combustible material. Excessive heat.
Incompatible materials Combustible material.
Hazardous decomposition
products
Barium oxide.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Ingestion Harmful if swallowed.

Inhalation Harmful if inhaled.

Skin contact Due to lack of data the classification is not possible.

Eye contact Causes serious eye irritation.

Symptoms related to the
physical, chemical and
toxicological characteristics
Not available.

Information on toxicological effects

Acute toxicity Harmful if inhaled. Harmful if swallowed.

Skin corrosion/irritation Due to lack of data the classification is not possible.

Serious eye damage/eye
irritation

Causes serious eye irritation.

Respiratory sensitization Due to lack of data the classification is not possible.

Skin sensitization Due to lack of data the classification is not possible.

Germ cell mutagenicity Due to lack of data the classification is not possible.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive toxicity Due to lack of data the classification is not possible.

Specific target organ toxicity

- single exposure

Respiratory tract irritation.

Specific target organ toxicity

- repeated exposure

Due to lack of data the classification is not possible. The perchlorate ion competes with iodide in the mechanism that governs uptake into the thyroid gland for growth hormone production. This effect is routinely countered by ensuring sufficient dietary intake of iodine, as perchlorate does not accumulate in the body. Studies on workers in plants where perchlorates are manufactured have shown no thyroid abnormalities; various clinical studies are ongoing. Perchlorates occur naturally in trace amounts in the environment, and are not classified as carcinogenic.

Aspiration hazard Due to lack of data the classification is not possible.

Chronic effects Prolonged inhalation may be harmful.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity No ecotoxicity data noted for the ingredient(s).

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Other adverse effects Not available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material

and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Not available.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

D005: Waste Barium

Waste from residues /
unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14. TRANSPORT INFORMATION

DOT

UN number UN1447

UN proper shipping name Barium perchlorate, solid

Transport hazard class(es) 5.1

Subsidiary class(es) 6.1(PGI, II)

Packing group II

Special precautions for Read safety instructions, SDS and emergency procedures before handling.
user

Labels required 5.1, 6.1

Special provisions IB6, IP2, T3, TP33

Packaging exceptions 152

Packaging non bulk 212

Packaging bulk 242

IATA

UN number UN1447

UN proper shipping name Barium perchlorate, solid

Transport hazard class(es) 5.1

Subsidiary class(es) 6.1(PGI, II)

Packaging group II

Environmental hazards No

Labels required Not available.

ERG Code 5P

Special precautions for Not available.
user

IMDG

UN number UN1447

UN proper shipping name BARIUM PERCHLORATE, SOLID

Transport hazard class(es) 5.1

Subsidiary class(es) 6.1(PGI, II)

Packaging group II

Marine pollutant No

Environmental hazards

Labels required Not available.

EmS F-H, S-Q

Special precautions for Not available.
user

Transport in bulk according
to Annex II of MARPOL

73/78 and the IBC Code
No data available.
DOT
IATA; IMDG

SECTION 15. REGULATORY INFORMATION

US federal regulations All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - Yes

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely

hazardous substance

No

SARA 311/312

Hazardous chemical

No

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act

(SDWA)

2 mg/l

2 mg/l

Monitoring

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and

1310.04(f)(2) and

Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

Food and Drug

Administration (FDA)

Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material

is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

BARIUM PERCHLORATE (CAS 10294-39-0) 500 LBS
US. Pennsylvania RTK - Hazardous Substances
Not regulated.
US. Rhode Island RTK
BARIUM PERCHLORATE (CAS 10294-39-0)
US. California Proposition 65
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.
International Inventories
Country(s) or region Inventory name On inventory (yes/no)*
Australia Australian Inventory of Chemical Substances (AICS) Yes
Canada Domestic Substances List (DSL) Yes
Canada Non-Domestic Substances List (NDSL) No
China Inventory of Existing Chemical Substances in China (IECSC) Yes
Europe European Inventory of Existing Commercial Chemical Substances Yes
(EINECS)
Europe European List of Notified Chemical Substances (ELINCS) No
Japan Inventory of Existing and New Chemical Substances (ENCS) Yes
Korea Existing Chemicals List (ECL) Yes
New Zealand New Zealand Inventory Yes
Philippines Philippine Inventory of Chemicals and Chemical Substances Yes
(PICCS)
United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory Yes
*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.